

REMARKS

In view of the above amendments and the following remarks, reconsideration of the rejections contained in the Office Action of June 18, 2007 is respectfully requested.

As an initial matter, the Applicants acknowledge and appreciate the Examiner's indication in item 2 of the outstanding Office Action that the amendments to the specification that were submitted with the response filed May 21, 2007 are acceptable and have been entered.

In items 3-6 of the Office Action, the Examiner rejected pending claims 1, 6-10, 12-19, and 32-34 under 35 USC § 112, first and second paragraphs. Specifically, the Examiner asserted that the phrase "the pretreatment liquid is an aqueous liquid free of any oxidizing agent" as set forth in previously-amended independent claim 1 submitted in the response filed May 21, 2007 is not supported by the original disclosure, and is confusing and contradictory so as to render the claims indefinite.

The Applicants sincerely regret any confusion that the previous amendment caused, and submit that those amendments were certainly not intended to confuse or mislead the Examiner. In this regard, the Applicants note that an important feature of the present invention is that the pre-plating treatment be applied in a manner so as to remove an existing metal oxide film from a surface of a metal region, and to *prevent re-oxidation* of the surface of the metal region after an activating catalyst has been applied to the surface of the metal region. Thus, the acid contained in the pretreatment liquid can constitute, for example, dilute sulfuric acid with no oxidation effects (see the examples at the top of page 38 of the original specification). It was this important feature that the Applicants were attempting to describe in the previous amendment submitted on May 21, 2007.

Nonetheless, in view of the Examiner's formal rejections of the claims under section 112, the phrase "free of any oxidizing agent" has now been deleted from the claims. As a result, it is respectfully submitted that the Examiner's formal rejections under section 112 have been overcome.

The Examiner has rejected claims 1, 6-9, 12-13, 17, 19, and 32-34 as being unpatentable over the Ferrier reference (USP 5,843,517) in view of Chen reference (USP 6,699,380) and the

JP '161 reference (Japanese Publication 11-317161); rejected claim 10 as being unpatentable over the Ferrier reference in view of the Chen reference and the JP '161 reference, and further in view of the Stevens reference (USP 6,824,612); rejected claims 14-16 as being unpatentable over the Ferrier reference in view of the Chen reference, the JP '161 reference, and further in view of the Yoshio reference (USP 6,555,158); and rejected claim 18 as being unpatentable over the Ferrier reference in view of the Chen reference and the JP '161 reference, and further in view of the Arcilesi reference (USP 4,814,205). However, independent claim 1 has now been amended as indicated above so as to clarify the pre-plating treatment. For the reasons discussed below, it is respectfully submitted that amended independent claim 1 and the claims that depend therefrom are clearly patentable over the prior art of record.

As recited in previously-presented independent claim 1, a pretreatment liquid is brought into contact with a surface of the substrate so as to *remove a metal oxide film* from a surface of the metal region. Removing impurities such as the metal oxide film will improve the electroless plating process which is to be subsequently performed on the surface of the metal region. The present inventors have recognized, however, that in conventional substrate processing methods, undesirable changes often occur to exposed surfaces of a metal region after a pretreatment process is performed on the surface (see, for example, page 6, lines 16-22 of the original specification). For example, if a substrate is left in an oxygen atmosphere, the surface of the substrate will undesirably re-oxidize.

As discussed above, an important feature of the present invention is prevention of the reappearance of impurities, particularly those in the form of an oxidation layer, on a pre-treated surface of a metal region. Thus, independent claim 1 has now been amended to describe this feature by reciting that the pretreatment liquid is brought into contact with the surface of the dry substrate in such a manner as to *form a continuous pretreatment film on the surface of the substrate to prevent the activated surface of the metal region from being re-oxidized* (see page 8, line 22 through page 9, line 11; and page 42, lines 14-22 of the original specification). As a result, the performance of the electroless plating process on the activated surface of the substrate (i.e., the surface of the metal region activated due to contact with the pretreatment liquid which

imparts a catalyst to the metal region, as recited in amended independent claim 1) will be improved.

The Ferrier reference teaches a composition and method for selective plating, including using an activator solution comprising precious metal ions and *an oxidizing agent* (see abstract). As specifically explained in column 3, lines 50-65, the oxidizing agent of the activator solution “may be one or a combination of a variety of oxidizing agents capable of oxidizing the metallic substrate to be plated upon.” Thus, contrary to amended independent claim 1, the Ferrier reference specifically teaches the use and application of a “pretreatment liquid” (the activator solution) *specifically for oxidizing* the surface of a metallic substrate. Therefore, the Ferrier reference clearly teaches away from bringing a pretreatment liquid into contact with the surface of a dry substrate in a such a manner as to form a continuous pretreatment film on the surface of the substrate to *prevent* the activated surface of the metal region from being re-oxidized.

In the outstanding Office Action, the Examiner noted that the Ferrier reference provides several comparative examples in which an oxidizing agent is not necessarily included in the “pretreatment” liquid. However, the Applicants first note that these comments were made with respect to the previously-presented version of independent claim 1, which recited that the aqueous liquid was free of any oxidizing agent. However, as noted above, that limitation has now been deleted from independent claim 1, and claim 1 has been amended to recite that the pretreatment liquid is brought into contact with the substrate to prevent the surface of the metal region from being re-oxidized. The Applicants further note that none of the examples in the Ferrier reference teach or even suggest application of an activator solution (or application of any other pretreatment liquid to a substrate before electroless plating) in a manner so as to *prevent* a surface of a metal region from being re-oxidized. As a result, to the extent that the Ferrier reference teaches *anything* related to the relationship between a pretreatment liquid and oxidizing a metal surface of a substrate, the Ferrier reference teaches, or at least strongly suggests, that the pretreatment liquid should be applied in a manner to *oxidize* the metal surface. Thus, it is submitted that the Ferrier reference does not teach or even suggest the process of bringing a

pretreatment liquid into contact with the surface of metal region of a substrate, as recited in amended independent claim 1.

The Chen reference, the JP '161 reference, the Stevens reference, the Yoshio reference, and the Arcilesi reference also do not disclose or suggest a substrate processing method comprising bringing a pretreatment liquid into contact with a metal surface or a substrate in a manner as recited in amended independent claim 1. Therefore, these references provide no apparent reason to modify the teachings of the Ferrier reference so as to obtain the invention recited in amended independent claim 1, particularly in view of the fact that the Ferrier reference specifically teaches that a preferred pretreatment liquid is capable of *oxidizing* a metal surface. Accordingly, it is respectfully submitted that amended independent claim 1 and the claims that depend therefrom are clearly patentable over the prior art of record.

In view of the above amendments and remarks, it is submitted that the present application is now in condition for allowance. However, if the Examiner should have any comments or suggestions to help speed the prosecution of this application, the Examiner is requested to contact the Applicant's undersigned representative.

Respectfully submitted,

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October 18, 2007